

Pumpkin Puzzlers, part 1

Reporting Category	Number and Number Sense
Topics	Counting and writing numerals from 0 to 100 Selecting a reasonable order of magnitude

Materials

- One medium-size pumpkin
- Counting cups (small party-mint cups are ideal)
- Colander
- Paper towels
- Table cloth
- Wet wipes
- Plastic trays

Vocabulary

more, fewer, the same, estimate, closer to

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Cut the pumpkin so students can look in and view the seeds. Tell students they will be estimating how many seeds are in the pumpkin. As you write the numerals 5, 50, and 500 on the board ask, "Do you think the number of seeds in our pumpkin is closer to 5 or 50 or 500?" Have students state their estimate, record it on the board, and ask them to explain their decision.
2. Spread a large tablecloth on the floor. Give each student a scoop of pumpkin pulp, and instruct them to separate the seeds from the pulp and place the seeds in a pile. After students have separated the seeds from the pulp, have students wash their hands while you put all the seeds together in a bowl.
3. Direct students to clear their desktops and get into cooperative groups of three or four. Circulate through the class, distributing three counting cups and a small scoop of seeds to each student. Try to judge the scoops so that there are between 20 and 30 seeds in each.
4. Lead the students in individually counting out a group of 10 seeds, putting them into a counting cup, and repeating the process. At the point when each student is no longer able to make a group of 10, ask students what they think they should do with their leftover seeds. Ask questions to lead students to the idea of combining all of the cooperative

group's leftover seeds. Allow each group time to combine their seeds into tens cups and set aside any new leftovers.

5. Again, ask students what they should do with each cooperative group's leftover seeds? Again, lead them to the idea of combining all the leftover seeds from all the cooperative groups to see whether they can make another group of ten. When no more groups of 10 can be made, put the leftover seeds in a separate container, and place it on a table in front of the class.
6. Direct students to place their cups of ten seeds on a tray that you will pass to each cooperative group in turn. Line up the tens cups on the tray in a row that is visible to the whole class. Lead students in skip counting the cups by tens to determine the number of seeds in the cups. When you get to 100, refer to the students' estimates written on the board, and ask whether there are any estimates we could eliminate, and why. (For example, we could eliminate an estimate of 58 because the count has long passed 58.)
7. As a class, continue skip counting the remaining tens cups, and "count on" the final leftovers to find the total. Record the total on the board. Engage students in a discussion about how their estimates compare to the actual count.
8. Have students write/draw in their math journals about the process of counting the seeds and the final results.

Assessment

- **Questions**

- "How did we group the seeds in order to help us count the number of seeds in our pumpkin? How else could we have counted the seeds?"
- Put different numbers of leftover pumpkin seeds in labeled plastic containers in your math center. Have students count and record the number of seeds found in each container (e.g., Tub A had 56 seeds. Tub B had 29 seeds.). "Can the seeds be counted in a different way other than one at a time?"

- **Journal/Writing Prompts**

- "Describe the results of this activity in your journal. Were you surprised by the results? Why, or why not?"
- "Compare the number of seeds found in our pumpkin to the number of seeds you would find in an apple or orange. Do you think a pumpkin has more seeds? Why, or why not?"

- **Other**

- Make and laminate construction paper pumpkins labeled with various numerals to 100. Have students count out the correct numbers of pumpkin seeds and place them on the corresponding pumpkins.

Extensions and Connections (for all students)

- Place a variety of seeds (pumpkin seeds, peach pits, orange seeds) in your science center for students to count and compare.
- Provide an estimation jar for students to estimate, count, and compare the number of various manipulatives required to fill the jar.

- Ask students whether the number of seeds found in a pumpkin is related to its size. How about the number of seeds in an apple or orange? Lead students in an experiment to find out.
- Have students create and solve addition and subtraction problems, using seeds and pumpkin boards (a picture of a pumpkin, cut out and glued to construction paper). White plastic cubes or lima beans may also be used to represent seeds.

Strategies for Differentiation

- Use smaller numbers of objects to count with and extend, as students are ready.
- Sing counting songs, and read counting rhymes and books.
- Have students count as they skip rope.
- Provide various hundreds charts to support students' comprehension of numbers beyond 100, as needed.